BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

S.No.	Subjects	Marks
I Year		
1	Hindi – I	100
2	English – I	100
3	Major 1: Pascal and Data Structures	100
4	Allied 1 : Computer Oriented Numerical and Statistical Methods	100
5	Practical 1 : Pascal Programming	100
II year		
6	Hindi – II	100
7	English – II	100
8	Major 2: Object Oriented Programming and C++	100
9	Allied 2 : Financial and Cost Accounting	100
10	Practical 2 : Object Oriented Programming and C++	100
III year		
11	Major 3 : Data and Computer Communication	100
12	Major 4 : System Software	100
13	Major 5 :Internet and Java Programming	100
14	Elective 1	100
15	Elective 2	100
16	Practical 3 : Internet and Java Programming	100
17	Practical 4 : Project viva-voce	100

Elective Subjects

1. Computer Graphics
2. Artificial Intelligence
3. System Analysis and Design

4. Multimedia and Virtual System
5. Software Engineering

FIRST YEAR

Paper – 1

Paper – 2

ENGLISH PAPER – I

Detailed Text

PROSE

1. In Prison – Jawaharlal Nehru
2. What is Science? – George Orwell
3. On Marriages – Nirad Chaudari
4. The Luncheon – N. Somerset Maugham
5. The Mourners – V. S. Naipaul
6. The Plane Crash – Juliane Koepcke
7. Better Late – R.K. Narayan

POETRY

1. Polonius' Advice t his Son – William Shakespeare
2. Every Town a Home Town - Kaniyan Purkunran
3. The Village Schoolmaster – Oliver Goldsmith
4. The Solitary Reaper – William Wordsworth
5. On his Blindness – John Milton
6. The Tyger – William Blake

Non-Detailed

Text : THE GIFTS AND OTHER STORIES abridged and simplified by Anthony Toyne – Oxford University Press, 1997.

The following stories

1. The Gifts – O. Henry
2. The Two Friends – Guy de Maupassant
3. The Bear Hunt – Leo Tolstoy
4. The Goblins and the Grave Digger – Charles Dickens
5. The Nightingale and the Rose – Oscar Wilde

GRAMMER

1. Articles and Prepositions
2. Infinitives and Gerunds
3. Five basic sentence patterns (SV SVC, SVO, SVOO, SVOC(A))
4. Arranging the component parts so as to form a sentence
5. Language work at the end of all lessons
6. Language work at the end of all lessons
7. Question Tag, Active and Passive Voice
8. Degrees of Comparison

COMPOSITION

1. Letter Writing (Formal and Informal)
2. Developing the hints
3. Comprehension
4. Writing Telegram
5. Completion of a passage
6. Precis Writing

Paper – 3

PASCAL AND DATA STRUCTURES

UNIT I:

Data types – Operators and statements – Structure of Pascal program – Statements – Comment – Input / Output statements – Formatting output data – Simple programs – Control statements.

UNIT II

Procedures and functions – Arrays – Records- Enumerated data types – Subranges and sets – files and pointers.

UNIT III

Definition of a data structure – Primitive and composite data types – Basic concept of Arrays – Structure – Representation of arrays – Fundamentals of stack and queue – Operations on stack and queue – Implementation of stack and queue (using arrays) – evolution of expressions – Circular queue.

UNIT IV

Linked list operations – Linked stacks and queues – Polynomial addition – Circular lists – Doubly linked list – Operations on Doubly linked list.

UNIT –V

Trees and Graphs : Basic Terminology – Binary Trees – Conversion of Forest to Binary Tree – Tree Traversals. Graph : Definition – Types of Graphs – Graph Traversal – Shortest path (Dijikstra's Algorithm)

Text Books

1. Programming with Pascal – D.Ravichandran TMH., 1998.
2. Pascal Plus Data Structures Algorithms and Advanced programming – Neli Dale and Susan C. Lilly, TMH.

Paper – 4

COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS

1. LINEAR SYSTEM OF EQUATIONS

Solution of systems of equations - Solution of simultaneous linear equations - Gauss Elimination methods - Gauss - Jordan methods, Jacobi and Gauss- Seidal iterative methods.

2. NUMERICAL DIFFERENTIATION AND INTEGRATION

Interpolation, Differentiation and Integration - difference table - Newton's forward and backward interpolation - Lagrangian interpolation - Differentiation formulae - Trapezoidal and Simpson rules – Gaussian - Quadrature.

3. DIFFERNTIAL EQUATIONS Ordinary Differential Equations - Taylor Series and Euler Methods, Runge Kutta Methods – Predictor - Corrector methods - Milne and Adam - Bashforth Methods - Error analysis.

4. CORRELATION REGRESSION

Correlation Co-efficient – Rank correlation of determination - Linear Regression – Method of Least Squares – Fitting of the Curve of the Form ax+b, ax+bx+c, ab^x and ax^b – Multiple and Partial Correlation(3-variable only).

5. PROBABILITY DISTRIBUTIONS

Probability Distributions - Random Variables - Moment Generating Functions, Characteristic functions - Standard distributions (Discrete and Continuous)

Text Book

1. "Nu"Numerical Methods in Science and Engineering" – Dr. M.K Venkataraman, The
   National publicsing Company, 1999
2. "Fundamentals of Mathematical Statistics " – S.C. Gupta and V.K.Kapoor, Sultand Chand Publication

References

Trivedi K.S.,Probability and Statistics with reliability and queueing and Computer Science Applications, Prentice Hall of India,1988.

SECOND YEAR

Paper – 5

HINDI- I

Paper – 6

ENGLISH PAPER – II

Detailed Text

PROSE

8. A Visit to India – Julian Huxley
9. University Days – James Thurber
10. I Have a Dream – Martin Luther King
11. The Story Teller – H.H. Munro (Saki)
12. George Bernard Shaw – Bertrand Russel
13. Only then shall we find Courage – Albert Einstein

POETRY

7. The Day is Done – Henry Wadsworth Longfellow
8. King Arthur's Farewell – Alfred Tennyson
9. O Captain! My Captain! – Walt Whitman
10. My Last Duchess – Robert Browning
11. Ode to a Nightingale – John Keats
12. Lochinvar –Walter Scott

Non-Detailed

A collection of One Act Plays -

1. Remember Ceasar – Gordon Daviot
2. The Proposal – Anotn Chekov
3. The Miracle Merchant – Saki
4. The Stepmother – Arnold Bennet
5. The Mahatma – Rama Sarma

GRAMMER

1. Relative Clauses
2. Conditional Sentences
3. Modal auxiliaries
4. Reported Speech
5. Transformation of Sentences
    a. Affirmative, Negative and Interrogative Sentences
    b. Simple, Compound and Complex Sentences
6. a,b,r clauses
7. Correction of Sentences based on
    a. Subject, Verb and Concord
    b. Tenses
    c. Articles and Prepositions.
    d. Question Tags

COMPOSITION

7. Paraphrasing
8. Dialogue Writing
9. Report Writing
10. Note Making
11. General Essay
12. Expansion of Idea.

Paper – 7

OBJECT ORIENTED PROGRAMMING AND C++

UNIT I:

Introduction to Object Oriented Programming – Basic concepts – Benefits of OOP, Object Oriented Languages – Application f OOP.

UNIT II:

C++ : Introduction – Identifiers and keywords – data types – constants – operators – Type conversion – Variables – Statements – Feature of iostream.h – Manipulators – I/O stream flags – control statements.

UNIT III:

Functions and program structures – Arrays – Pointers – Structures – Union and Bit fields.

UNIT IV:

Classes and Objects – Constructors – Destructors – Inline member functions – Static class members – Friend functions – Dynamic Memory allocations - Inheritance – Overloading.

UNIT V:

Polymorphism – Templates and exception handling – data file operations.

TEXT BOOKS:

1. Object Oriented Programming C++, Balagurusamy, T.M.H. (Unit I)
2. Programming with C++, D.Ravichandran, T.M.H.

REFERENCE BOOKS:

1. Programming with C++ , Schaum's outline series, T.M.H.
2. Teach yourself C++, Herbert Schildt, T.M.H., 3rd Edition, 1998.

FINANCIAL AND COST ACCOUNTING

UNIT I

Definition and functions of accounting – accounting concepts- objectives of accounting – accounting principles- journal- ledger- trial balance

UNIT II

Subsidy books- cash book- final accounts and its adjustments.

UNIT III

Cost accounting- meaning- objectives- nature and scope- relationship between management accounting, cost accounting and financial accounting. Budgets and budgetary control- preparation of cash budget and flexible budget

UNIT IV

Fund flow analysis and cash flow analysis

UNIT V

Marginal Costing – absorption costing- practical application of marginal costing technique in different situations- P/V ratio- B.E.P- margin of safety

THIRD YEAR

Paper – 9

DATA AND COMPUTER COMMUNICATION

1. INTRODUCTION

Communication model - Data communications networking - Data transmission concepts and terminology - Transmission media - Data encoding -Data link control.

2. NETWORK FUNDAMENTALS

Protocol architecture - Protocols - OSI - TCP/IP– LAN architecture - Topologies - MAC - Ethernet, Fast Ethernet, Token ring, FDDI, Wireless LANS - Bridges.

3. NETWORK LAYER

Network layer - Switching concepts - Circuit switching networks - Packet switching - Routing - Congestion control - X.25 - Internetworking concepts and X.25 architectural models - IP - Unreliable connectionless delivery - Datagram - Routing IP datagram's - ICMP.

4. TRANSPORT LAYER

Transport layer - Reliable delivery service - Congestion control - connection establishment - Flow control - Transmission control protocol - User datagram protocol.

5. APPLICATIONS

Applications – Sessions and presentations aspects – DNS, Tell Net, r login, FTP, SMTP – www Security – SNMP.

Text Book

1. William Stallings, "Data and Computer Communications", 5th edition, Pearson Education, 1997

References:

1 .Larry L.Peterson & Bruce S.Davie, "Computer Networks - A systems Approach", 2nd Edition, Harcourt Asia/Morgan Kaufmann, 2000

2. "Communication Network – Fundamental concepts and key Architecture", Leon Garcia and Widjaja.

Paper – 10
SYSTEM SOFTWARE

1. INTRODUCTION

Basic Concepts – Machine Structure – Typical Architectures

2. ASSEMBLERS

Functions - Machine dependent and Machine independent assembler Features - Design and Implementation - Examples.

3. LOADERS AND LINKERS

Functions - Machine dependent and Machine independent loader features - Linkage editors - Dynamic linking - Bootstrap loaders - Implementation - Examples.

4. MACRO PROCESSORS

Functions - Features - Recursive macro expansion - General-purpose macro processors - Macro processing within language translators - Implementation – Examples.

5. COMPILERS AND UTILITIES

Introduction to compilers - Different phases of a compiler - Simple one pass compiler - Code optimization techniques - System software tools - Text editors - Interactive debugging systems.

Text Book

1. Leland L.Beck, “System Software - An Introduction to Systems Programming”, 3rd Edition,Pearson Education, 1999

References:

1. D.M. Dhamdhere, “System Programming and Operating Systems”, Tata McGraw Hill Company, 1993.

2. A.U.Aho,Ravi Sethi and J.D.Ullman, “Compilers Principles Techniques and Tools”, Pearson Education, 1988

3. John J. Donovan, “Systems Programming”, Tata McGraw Hill Edition, 1991.

Paper - 11

INTERNET AND JAVA PROGRAMMING

UNIT I :

Internet connection concepts – Intranets : Connecting LANs to the internet – E-Mail concepts – E-Mail security : Reasons to secure the messages, Public key cryptography, Using cryptography with E-Mail – Online Chatting and Conferencing Concepts – WWW concepts.

UNIT II:

Fundamentals of Object Oriented Programming – Java evolution – Overview of JAVA Language – constants, variables and Data types- Operators and Expressions – Decision making: Branching and Looping.

UNIT III:

Classes, Objects and Methods – Arrays, Strings and Vectors – Multiple inheritance.

UNIT IV:

Packages – Multithreaded Programming – Managing Errors and Exceptions.

UNIT V:

Applet programming – Graphics Programming – Managing Input / Output files.

Reference Books

1. D.Norton and H.Schildt, Java2 : the complete reference, TMH 2000.

2. Internet & World wide Web How to program, Deitel & Deitel, Prentice Hall 2000.

3. Java How to program,Deitel & Deitel, Prentice Hall 1999.

4. Core Java Vol.1 and Vol. 2, Gary Cornell and Cay S.Horstmann, Sun Microsystems Press 1999.

5. Active X source Book, Ted Coombs, Jason Coombs and Don Brewer, John Wiley &sons 1996.

PRACTICAL 3 : INTERNET AND JAVA PROGRAMMING

1. Command Line Arguments

Write a Java Applications which converts the given string in uppercase and lowercase using command line arguments.

2. CALL-ME telephone department send telephone bill to its customers on the 15^{th} day of the month. The telephone bill details consist of teleno (integer), cust nm (10 characters), cust-add (30 characters) and no-calls (integers), amt (float).

With the help of java program create a class named bill with above mentioned telephone bill details. Code a constructor such that it initalises the data member to fixed values and finalizer methods to destroy the data member.

CALL-ME

Telephone Department

Customer Name :…….. Tel No. ……

Customer Add : …….

Call made : <no calls)

Total bill : …….

If paid after 10 days, you have to pay : ……

Write a Java program.

Note: normally, the department charges Rs. 0.80/- per call. For late payment, (the department charges Rs. 1.00/- per call).

3. Assume that a bank maintains 2 kinds of account for its customers, one called savings account and the other current account. The savings account provides compound interest and withdraw facilities but no cheque book facility, the current account provides cheque book facility but no interest current account holders should also maintain minimum balance and if the balance falls below this level, a service charge is imposed.

Create a class account that stores customers name, account number and type of account. From this, derive the class cur-acct and sav-acct to make them more specific to their requirements. Include the necessary methods in order to achieve the following tasks.

a. Accept deposit from a customer and update the balance.

b. Display the balance.

c. Compute and deposit Interest.

d. Permit withdrawl and update the balance.

e. Check for the minimum balance, impose penality, if necessary and update the balance.

Use constructors and methods to initialize the class members.

4. Write a program to extract portion of a characters from the string and print the extracted string. Assume that M characters are Extracted starting with the nth characters.

5. Write a program that accepts a shopping list of five items from the command line and stores them in a vector and accomplish the following.

- To delete an item in the list
- To add an item at a specified location in the list.
- To ad an item at the end of the list.
- To print the contents of the vector.

6. Implementation of the concept of multiple Inheritance using interfaces and design a package to contain the class students and another package to contain the interface sports.

7. Develop a simple real-life application program to illustrate the use of multithreads.

8. a. Create a try block that is likely to generate three types of exception and then incorporate necessary catch blocks to catch and handle them appropriately.

b. Define an exception called 'No match Exception' that is thrown when a string is not equal to 'India'. Write a program that used this exception.

9. Write a java applet, which will create the layout below.

FORMAT

Enter your name :

Enter your Age :

Select City : -Delhi - Madras

Select Software : -Java - Delphi -Oracle-Visual Basic

Ok cancel

Handle the following simple validation.

The name entered should be less than 25 characters wide.

Age entered should be less than 60. Hint use the Boolean action

(Event eve. Object arg)

10. Load an image on to applet. As the user selects portions of this image, rectangular regions corresponding to the selection should be highlighted by enveloping them in rectangles (Use mouse events like mouse up and mouse down) Also, provide a mechanism whereby the user can change the colors of selected regions.

11. Create an application which consists of dialog box that could be used to obtain an username and a password to connect to some on-line service. The dialog box consists of two fields 'Username' & 'Password' and 2 button 'OK' & 'Cancel' for accepting user input, validate or cancel the dialog box.

12.Write an applet which will play 2 sound notes in a sequence continuously use the play() methods available in the applet class and the methods in the audioclip interface.

13. Write a program which will open an existing file and then append text to that file.

14. Use the javascript to make a calculator.

15. Prepare the college profile using HTML.

ELECTIVES

COMPUTER GRAPHICS

UNIT I:

Introduction to Computer Graphics – Display Devices – Hard copy devices – Display processors – Output primitives.

UNIT II:

Two Dimensional transformations – Windowing and Clipping.

UNIT III:

Segments – Display file compilation – Interactive input techniques – Physical input devices – interactive picture construction techniques.

UNIT IV:

Three Dimensional Co-ordinate systems – 3D Transformations – 3D Display techniques – parallel projection – perspective projection.

UNIT V:

Hidden Surface and Hidden line removal – classification of Algorithms – Backface removal – Depth buffer Method – Scan line method – Depth sorting method – Area subdivision method – Hidden line elimination – Design of the user interface.

TEXT BOOK:

1. Computer Graphics – Donald Hearn & M. Pauline Baker, PHI, 1996.

REFERENCE BOOKS:

1. Computer Graphics – A programming Approach – Steven Harrington, Mc.Graw Hill Inc., 1987.
2. Principles of Interactive Computer Graphics – Newman W.M., and Sproull RF, Mc. Graw Hill, Tokyo, 1997.

ARTIFICIAL INTELLIGENCE

UNIT – I:

Introduction : AI problems – AI techniques – Criteria for success. Problems, problem spaces and search : State space search – production systems – Problem characteristics – Production system characteristics – Issues in the design of Search.

UNIT – II:

Heuristic search techniques : Generate and Test – Hill climbing – Best first search – Problem reduction – Constraint satisfaction- Means Ends Analysis. Knowledge Representation Issues : Representation and mappings – Approaches to knowledge Representation – Issues is knowledge representation – Frame problem.

UNIT – III:

Using predicate logic: Representing simple facts in Logic – Representing Instance and Isa Relationship – computable functions and predicates – Resolution – Natural

deduction. Representing knowledge – using Rules : Procedural versus Declarative knowledge – Logic programming – forward versus Backward Reasoning – Matching – Control knowledge.

UNIT - IV :

Symbolic Reasoning under Uncertainity : Non-Monotonic Reasoning – Implementation Issues – Augmenting a problem solver – Implementation of depth first and breadth first search. Statistical Reasoning : Bayes theorem – Certainity Factors and Rule based Systems – Bayesian Network – Dempster Shafer Theory – Fuzzy Logic.

UNIT – V:

Weak Slot and Filler Structures : Semantic Nets – Frames, Strong Slot and Filler Structures : Conceptual Dependency Scripts – CYS.

TEXT BOOK

1. Artificial Intelligence – Elaine Rich and Kevin Knight, T.M.H., 2nd Edition 1991.

REFERENCE BOOKS

1. Foundations of Artificial Intelligence and Expert System, V.S. Janakiraman, K. Sarukesi and P. Gopalakrishna, Macmillan India, 1993.

2. Introduction to Artificial Intelligence and Expert Systems, Dam W. Patterson, PHI, 1990.

SYSTEM ANALYSIS AND DESIGN

UNIT – I:

The system concept – characteristics of a system – elements of a system – types of system – the system development life cycle – consideration for candidate systems – the role of system analyst – real life examples for systems.

UNIT – II:

System analysis – systems planning and the initial investigation – used – determine the requirements – background analysis – fact finding technique and analysis – information gathering – review of literature –procedures – forms – online observations – interviews and questionnaires and types.

UNIT – III:

Tools of structured analysis – data flow diagram – data dictionary – decision tree – decision table – feasibility study – system performance – identification of system objectives – description of outputs – feasibility considerations – steps in feasibility analysis – report and oral presentation – cost benefit analysis.

UNIT – IV:

System design – process and stages of system design – methodologies – structure and form driven methodology – process control – data validation – I/O and form design – file organization and database design – sequential and indexed – sequential organization – database objectives – logical and physical data – normalization.

UNIT – V:

System Implementation – system testing and quality assurance - nature of test data – test plan – levels of quality assurance – Implementation and software maintenance – hardware software selection – system security applications.

TEXT BOOKS

1. System Analysis Design – Elias M. Awad, Galgotia Publications Pvt. Ltd.

REFERENCE BOOKS

1. Analysis design of information of systems, James A. Senn, Mc Graw Hill.
2. Introducting systems analysis and design, volume I & II, Lee, Galgotia Book Source.
3. Elements of system analysis, Marin Gore, John stubbie, Galgotia Book source.

MULTIMEDIA AND VIRTUAL SYSTEM

UNIT – I:

Introduction to Multimedia – Multimedia Hardware and Software Essentials – Text in Multimedia – Multimedia Graphics fundamentals.

UNIT – II:

Multimedia Audio: Sound card fundamentals, Digital Audio playback and recording – MIDI fundamentals – Digital Video production techniques.

UNIT – III:

Image processing : Digital image fundamentals – Digital image development and editing – Computer Animation techniques – Animation software.

UNIT – IV:

Multimedia project design – Multimedia on CD-ROM – Multimedia file formats – Growth pace of multimedia in IT industry.

UNIT – V:

Introduction to virtual reality Brief history of Virtual reality – VR onflight simulation – VR on CAD / CAM processing – virtual banks.

REFERENCE BOOKS

1. Multimedia Magic, S. Gokul, B.P.B. Publicatios.
2. Multimedia Making it work, Tay Vaughan, TMH 3rd edition.
3. Virtual Reality System, John vice, Addision Wesley, 1995.
4. Multimedia Leteracy, Free T. Hotstetter, Mc. Graw Hill, 1995.
5. Multimedia Systems, John F. Koefgel Buford, Addision Wesley, 1994.

SOFTWARE ENGINEERING

1. FORMAL SPECIFICATIONS

Models - Specification languages - Abstraction levels - Domain specification language.

2. SOFTWARE MEASUREMENT

Frame work - Process attributes - Effort, time and cost measurement - Cost estimation - Product attributes - Size - Control flow structure - Modularity - Complexity measures - Technical metrics.

3. SOFTWARE REUSABILITY

Reuse dimensions - Reuse of intermediate products - Reuse and the Software Life cycle - Reuse tools and techniques.

4. TOOLS

Computer aided software Engineering - Project management tools - Analysis and design tools - Programming tools - Integration and testing tools.

5. SOFTWARE ENGINEERING STANDARDS

ISO - SET - Specification - Design - Programming -Testing

References:

1. Hans van Vilet, software Engineering Principles and Practice, John Wiley and Sons Ltd, 2000.

2. Roger Pressman, Software Engineering - A Practitioner Approach, 5th Edition, McGraw Hill, 2000.

3. Normal. E. Fenton, Software Metrics, Chapman and Hall, 1991.

4. J.B.Wordworth, Software Development with Hall, 1991.

5. J.B.Wordworth, Software Development with Z, Addison Wesley, 1992.

Information technology is in almost every industry and a growing trend for qualified IT specialists is being seen in healthcare and academia. As the world becomes more technological every day, well-trained IT professionals are needed. Excellent career opportunities and placements are available and a Bachelor IT degree will set you on a path for success.Â Bachelor's study program "Electrical Engineering and Information Technology" is designed to enable students to acquire mathematical and physical knowledge, the necessary theoretical and practical experience in electrical engineering, information technology, and cybernetics.Â Bachelor of Science in Information Technology and Cybersecurity. Featured. Read More. Starting Academic Year 2018-2019 (August 2018), the Bachelor of Science in Information Technology program will offer three professional elective tracks for students: 1. Network and Security The Network and Security track provides a continuation of the CCNA modules delivered during the 2nd and 3rd years of BS IT students.Â Focus is on hardware integration, implementation, and application rather than engineeringâ€™s hardware development and design. Introduction of existing technologies, such as the Boe-Bot series and Arduino, will be used to identify and create possible applications, focusing on real-life scenarios (i.e., Internet of Things). Identity. Becoming Part of the Program. The BSIT (Bachelor of Science in Information technology) course offered by Westcliff University is an interdisciplinary program that offers pathways for students who want to pursue careers in the growing field of Information Technology. The program focuses on addressing business challenges and creating new opportunities with technology.Â Focuses on the practical and theoretical dimensions of information technology, and prepares students for careers in the fields of information technology, IT management and cyb + Featured. Focuses on the practical and theoretical dimensions of information technology, and prepares students for careers in the fields of information technology, IT management and cybersecurity.